



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7

11201 Renner Boulevard
Lenexa, Kansas 66219

Dec 2, 2019

MEMORANDUM

SUBJECT: Evaluation of Labadie Energy Center §316(a) Final Determination
Labadie, Missouri

FROM: Venessa Madden, Ecological Risk Assessor
Applied Sciences Branch
Laboratory Services and Applied Science Division

**VENESSA
MADDEN**

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VENESSA MADDEN
Date: 2019.12.02
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TO: John Dunn, Environmental Engineer
Permits and Loans Branch
Water Division

As requested, we have reviewed the Labadie Energy Center (LEC) §316(a) Final Determination. If you have any questions or concerns regarding the comments below, please contact Venessa Madden at x7794.

General Comment

The fish assemblage in the LMOR in the vicinity of the LEC were sampled during the two-year sampling program using bag seines, electrofishing, hoop nets, and Missouri trawls. Macroinvertebrates were sampled using Hester-Dendy samplers which collect drifting organisms, and a Ponar dredge, which collects benthic infaunal organisms. This overall sampling approach for fish and macroinvertebrate monitoring appears to be adequate to provide an overall assessment of the biological community in the vicinity of the LEC.

Specific Comments

1. **Table 5-3.** In addition to the graphical representations of the total abundance of fish, a more detailed evaluation would include the pattern of dominant and important species across the four zones.
2. **Section 5.4.1.3.** This section addresses the Asian carp with respect to increases in nuisance species. Silver (Asian) carp accounted for 1.7 percent of the catch in the Upstream Reference zone, 2.4 percent in the Thermally Exposed zone, and 1.9 percent in the Downstream zone (Table 5-3). Their contribution to total fish biomass ranged from 10 percent in the Upstream Reference zone to 12 percent in the Thermally Exposed and Downstream zones (Table 5-4). Although the differences are slight, there does appear to be an increase in Asian carp in areas affected by the LEC. An additional sentence should be added stating that slight increases in the number and biomass of Asian carp were observed in areas impacted by the LEC.



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3. **Section 5.4.1.4.** The §316(a) demonstration is a weight of evidence approach that uses an overall pattern of standardized differences (similar to a t-statistic) across all the metrics to determine if there are any overall thermal effects. For fish and macroinvertebrates, they compared the thermally-influenced zone to the upstream zone and the downstream zone to the upstream zone. For fish, slight degradation was found in the comparison between the thermally-influenced zone and the upstream zone; whereas, a slight improvement was found between downstream and upstream zones. For macroinvertebrates, a slight degradation was found in comparison between the thermally-influenced zone and upstream as well as the downstream and upstream zones. It would be informative to see individual t-tests for some of the metrics, including abundance (numbers), diversity (numbers), fraction non-rough (numbers), and fraction heat tolerant (numbers). Heat tolerance is more important than pollution tolerance in relation to the impacts from the LEC. Moreover, combining numbers and biomass can mask some of the specific community level effects.
4. **Section 5.4.2.** The Ponar and H-D macroinvertebrate sampling methods provided very different results. Similar to the fish results (which are based on combined sampling gears), an evaluation of the combined macroinvertebrate data from the Ponar and H-D samplers is recommended to gain a better overall picture of the macroinvertebrate community in each zone.
5. **Section 6.3.3.** Based on avoidance temperatures, the entire cross-section of the water column is available for passage for Asian carp, channel catfish and emerald shiner. For gizzard shad and white crappie, approximately half of the cross-sectional area in the vicinity of the LEC would still be available for passage under the worst-case conditions. Under more typical operations, no blockage would be expected for these species. To fully characterize the zone of passage, any future monitoring within the zone is recommended. For the more heat tolerant species, monitoring should occur when the zone is expected to be most limited.

For walleye and sauger, use of areas near the LEC are limited to spawning migration during late winter and early spring. Blockage of migration in the zone of passage is not expected to occur. Similarly, for pallid sturgeon migratory blockage is not expected. To fully characterize the zone of passage with regard to the more heat intolerant species, any future monitoring within the zone during migratory periods is recommended.

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DIV/BR	LSASD/ASB	LSASD/ASB	LSASD/ASB	
NAME	VENESSA MADDEN <small>Digitally signed by VENESSA MADDEN Date: 2019.12.02 14:43:55 -06'00'</small>	MICHAEL BERINGE R <small>Digitally signed by MICHAEL BERINGE Date: 2019.12.02 15:17:01 -06'00'</small>		
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